Herschel observations of near-Earth objects: Encounters with the spacecraft and with the Earth

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The Herschel MACH-11 (Measurements of 11 Asteroids & Comets with Herschel) Programme has as its prime goal to observe those asteroids & comets which have been or will be visited by spacecraft or those which are being studied with a similar goal in mind. The following near-Earth asteroids (NEAs) form part of the list of targets making up this program and will be addressed in this analysis:
– 1999 JU_3 (Hayabusa 2 mission target)
– 1999 RQ_{36} (OSIRIS-REx mission target)
– 1996 FG_3 (Marco-Polo R backup mission target)
– (99942) Apophis (Study target)

An additional NEA (not part of the MACH-11 program) will also be reviewed, namely 2005 YU_{55}.

Each target was observed using the PACS Photometer of the Herschel Space Observatory (Pilbratt et al 2010). The extracted fluxes from each observation campaign were fed into a thermophysical model which has been validated against a large database of asteroids including targets of other spacecraft missions. In all cases, radiometric properties of each target have been derived and will be presented, with their impact on already published data being analysed & discussed.

References: Pilbratt, G. L., Riedinger, J. R., Passvogel, T., et al. 2010, A&A, 518, L1.